

**FUTURE FISHERIES IMPROVEMENT PROGRAM  
GRANT APPLICATION**

*(please fill in the highlighted areas)*

**I. APPLICANT INFORMATION**

A. Applicant Name: Gallatin National Forest and Montana Fish, Wildlife and Parks

B. Mailing Address: 3710 Fallon Street, Suite C

C. City: Bozeman State: Montana Zip: 59718

Telephone: (406) 522-2544

D. Contact Person: Bruce Roberts (Gallatin National Forest), Ron Spoon (Montana Fish, Wildlife and Parks), Dave Moser (MFWP), Travis Horton (MFWP) and Dale White, PE (GNF)

Address if different from Applicant: Montana Fish, Wildlife and Parks, P.O. Box 1137

City: Townsend State: MT Zip: 59644

Telephone: (406) 266-4237

E. Landowner and/or Lessee Name (if other than Applicant): Gallatin National Forest, Lisa Stoeffler, Bozeman District Ranger

Mailing Address: 3710 Fallon Street, Suite C

City: Bozeman State: Montana Zip: 59718

Telephone: (406) 522-2531

**II. PROJECT INFORMATION\***

A. Project Name: South Fork Sixteenmile Creek Barrier (Phase 1), Westslope Cutthroat Trout Conservation,

River, stream, or lake: South Fork Sixteenmile Creek

Location: Township 3 North Range 6 East Section 21

County: Gallatin

B. Purpose of Project:

Gallatin National Forest (GNF) and Montana Fish, Wildlife and Parks (MFWP) are jointly proposing a westslope cutthroat trout conservation project in the headwaters of the South Fork Sixteenmile Creek east of Flathead Pass near the northern end of the north Bridger Mountains (See attached map). The South Fork is a tributary to the Middle Fork Sixteenmile Creek which joins main Sixteenmile Creek approximately five miles east of the community of Maudlow. The Sixteenmile Creek watershed drains the northwest corner of the Crazy Mountains flowing westward entering the Missouri River upstream of Toston. Presently, there are no known genetically pure or conservation (> 90% pure) populations of westslope cutthroat trout within this 530 mi.<sup>2</sup> central Montana watershed.

Westslope cutthroat trout and mottled sculpin historically were the only fish species occupying the headwaters of the South Fork Sixteenmile Creek. Both rainbow trout and Yellowstone cutthroat trout were stocked into the Sixteenmile Creek drainage. Both species have hybridized with native westslope cutthroat trout causing a significant reduction in genetic purity within the proposed project area.

Because of the extent of hybridization, we believe the existing population of hybridized cutthroat trout has lost most of its conservation value. Stream habitat within the proposed project area is capable of sustaining a large population of westslope cutthroat trout. In 2009, a good fish barrier construction location was identified (See attached map).

C. Brief Project Description:

The project would consist of three phases: barrier construction, fish removal treatments and restocking with genetically pure westslope cutthroat trout. Both agencies would be working together on all phases of the project including required planning through NEPA and MEPA as well as implementation. Live fish and/or eggs from select small imperiled populations of genetically pure westslope cutthroat trout from within the upper Missouri River drainage (Duck, South Fork Quartz, Kady, South Fork Warm Springs, Skelly, Staubach, Bostwick and Wildhorse creeks) would be used to restock this vacated habitat.

This project would restore westslope cutthroat trout to six and half stream miles within five interconnected tributaries in the headwaters of the South Fork Sixteenmile Creek drainage. Additional important benefits of the project would include:

- Protect from future hybridization and/or competition with non-native trout.
- Replicate the genetics of several small imperiled populations within the upper Missouri River drainage.
- Reduction in the risk of extinction and future potential listing under the Endangered Species Act; and,
- Although the existing population of westslope cutthroat trout is hybridized, they are currently managed under catch-and-release only fishing regulations. In the future, total population of westslope cutthroat trout within the proposed project area should support a change from catch-and-release to allow for some level of harvest.

The following is a brief summary of proposed contributions for Phase 1. There are many other contributions to the project (Phases 2 and 3) which will not be summarized. In addition to what is being requested from Future Fisheries (\$79,752) for Phase 1, a separate proposal to PPL-MT (Madison River Fisheries TAC) has been submitted for additional \$30,000. We will know the results of the PPL-MT request before the scheduled December 18<sup>th</sup> Citizens Review Panel meeting in Helena. The GNF has committed \$50,000 of in-kind cash towards the construction of the barrier, plus additional \$22,210 for in-kind services for surveying, NEPA, design, engineering review, contracting, etc.

Madison-Gallatin Trout Unlimited has been approached about becoming a partner with this project. Without further discussion with the full Chapter Board, the president cannot make a financial commitment for this project. MGTU would like to help out possibly as a contingency contributor in case the contract package exceeds the funding provided by PPL-MT, Future Fisheries and Gallatin National Forest.

South Fork Sixteenmile Creek is a third order stream at the point of the proposed fish barrier with a 6.2 mi.<sup>2</sup> watershed above. At that point, the stream channel is classified as a Rosgen B4 (cobble/boulder) with 12' bankfull width and 2.4% gradient. See attached Draft Design Report for additional information.

D. Length of stream or size of lake that will be treated: 6.5 miles

E. Project Budget:

Grant Request (Dollars): \$ 79,752

Contribution by Applicant (Dollars): \$ 50,000 In-kind \$ 22,210  
(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): \$ 30,000 In-kind \$ 0  
(attach verification - See page 2 budget template)

**Total Project Cost: \$ 181,947**

- F. Attach itemized (line item) budget – see template
- G. Attach specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete supplemental questionnaire ([fwp.mt.gov/habitat/futurefisheries/supplement2.doc](http://fwp.mt.gov/habitat/futurefisheries/supplement2.doc)).
- H. Attach land management and maintenance plans that will ensure protection of the reclaimed area.

### III. PROJECT BENEFITS\*

- A. What species of fish will benefit from this project?:

Westslope cutthroat trout and mottled sculpin

- B. How will the project protect or enhance wild fish habitat?:

Protect from future hybridization and/or competition with non-native trout. Replicate the genetics of several small imperiled populations within the upper Missouri River drainage.

- C. Will the project improve fish populations and/or fishing? To what extent?:

Although the existing population of westslope cutthroat trout is hybridized, the population is currently managed under catch-and-release fishing regulations by MFWP. In the future, total population of westslope cutthroat trout within the proposed project area should support a change from catch-and-release to allow for some level of harvest.

- D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Ninety-nine percent of the proposed project area is located on public land including the barrier site. The proposed project area is presently lightly fished. The presence of genetically pure westslope cutthroat trout could possibly increase fishing pressure as a result of anglers being attracted to this unique fishery. Changing from catch-and-release to some level of harvest could possibly result in an increase in the number of anglers. The private land portion of the proposed project area contains very marginal trout habitat and angling opportunities because of the small stream size.

E. If the project requires maintenance, what is your time commitment to this project?:

Gallatin National Forest and Montana Wildlife and Parks have worked extremely close to restore westslope and Yellowstone cutthroat trout throughout each of the many sub-basins within the boundaries of the GNF and Region's 3 and 5 of MFWP. Both agencies have an excellent track record of working together to maintain past investments, if required. Both agencies would do what it takes to maintain these investments immediately.

The proposed project area consists primarily of four sections of land. Two of these sections (20 & 29) have always been managed as National Forest System Lands. The other two sections (21 & 28) were acquired through a land exchange in 1999. These latter two sections were heavily roaded and logged prior to the land exchange. In 2011, the GNF closed and/or decommissioned several miles of roads within all four sections including removing three culverts along fish bearing streams. Two additional culverts along opened roads have been identified as possible seasonal fish passage barriers. The GNF is planning to improve fish passage at these culverts either by removing and/or replacing with properly designed All Organism Passage (AOP) culverts. The entire project area lies within the Alexandra livestock grazing allotment. The GNF will continue to manage this allotment to standard. A Northwestern Energy transmission line (300' wide clearing) bisects the headwater tributaries upstream of the known fish distribution. Paralleling this transmission line is the Flathead Pass Road managed by Gallatin County. The GNF fisheries program has funded and participated in the pre-treatment of noxious weeds in the immediate area and access routes to the proposed barrier and will continue post-project treatments until full re-vegetation of all disturbed areas is achieved. The GNF will manage the proposed project area to achieve project objectives.

F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

Hybridization from non-native rainbow and Yellowstone cutthroat trout that were previously stocked within the larger Sixteenmile Creek drainage.

G. What public benefits will be realized from this project?:

This project would greatly benefit the general public in that it would help achieve the conservation and restoration goals set forth in the July 2007, "Memorandum Of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana" especially Objective 3 (Seek collaborative opportunities to restore and/or expand populations of each cutthroat subspecies into selected suitable habitats within their respective historical ranges). This project would provide an opportunity to fish for Montana' State Fish, and if feasible allow for future limited harvest. Efforts like these will prevent a future listing under ESA and associated regulatory restrictions.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

One project area landowner and two adjacent landowners (one of which is also the livestock grazing permittee on the Alexandra Allotment) have been consulted about this project. The general consensus is that if the project doesn't affect their animals, private land operations and property rights they would be willing to accept the project and possibly work with both agencies to implement the project. The option of signing up under Candidate Conservation Agreement (CCA) program was discussed with each of these landowners.

It is believed that the proposed project, including all three phases, would have no effect on existing water rights. It is believed that this project would not interfere with any property rights upstream or downstream. The proposed project area consists of approximately 99% public land.

The general public has not yet been scoped on the project.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

There are no licensed outfitter and guides with fishing operations approved for this portion of the Gallatin National Forest which might be drawn to this unique fishery upon the completion of all three phases of the project. The barrier site is very remote and located behind a locked gate nine months out of the year. The access roads turn slimy when wet which discourages access.

J. Is this project associated with the reclamation of past mining activity?:

No. There are no active and/or historic mining operations within this portion of the Sixteenmile Creek drainage.

**Each approved project sponsor must enter into a written agreement with the Department specifying terms and duration of the project.**

#### **IV. AUTHORIZING STATEMENT**

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:

Date:

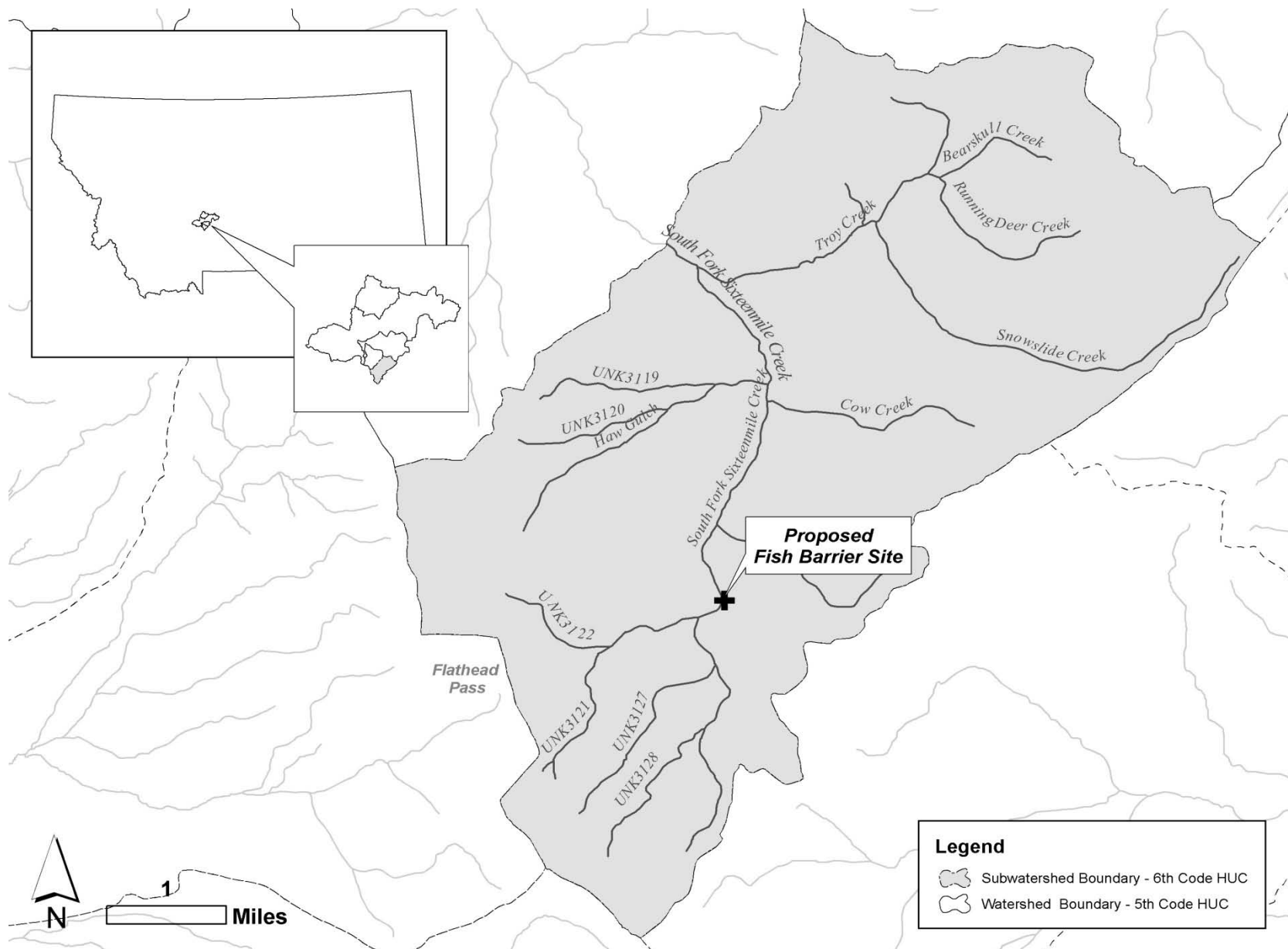
Sponsor (if applicable):

**\*Highlighted boxes will automatically expand.**

**Mail To: Montana Fish, Wildlife & Parks  
Habitat Protection Bureau  
PO Box 200701  
Helena, MT 59620-0701**

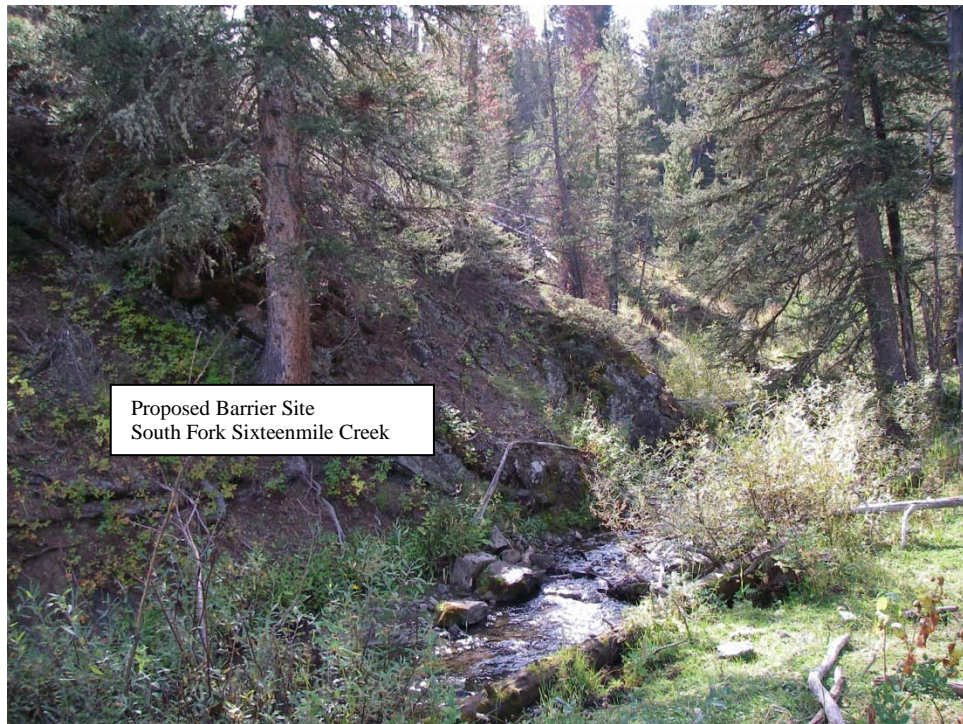
**Incomplete or late applications will be returned to applicant.  
Applications may be rejected if this form is modified.**

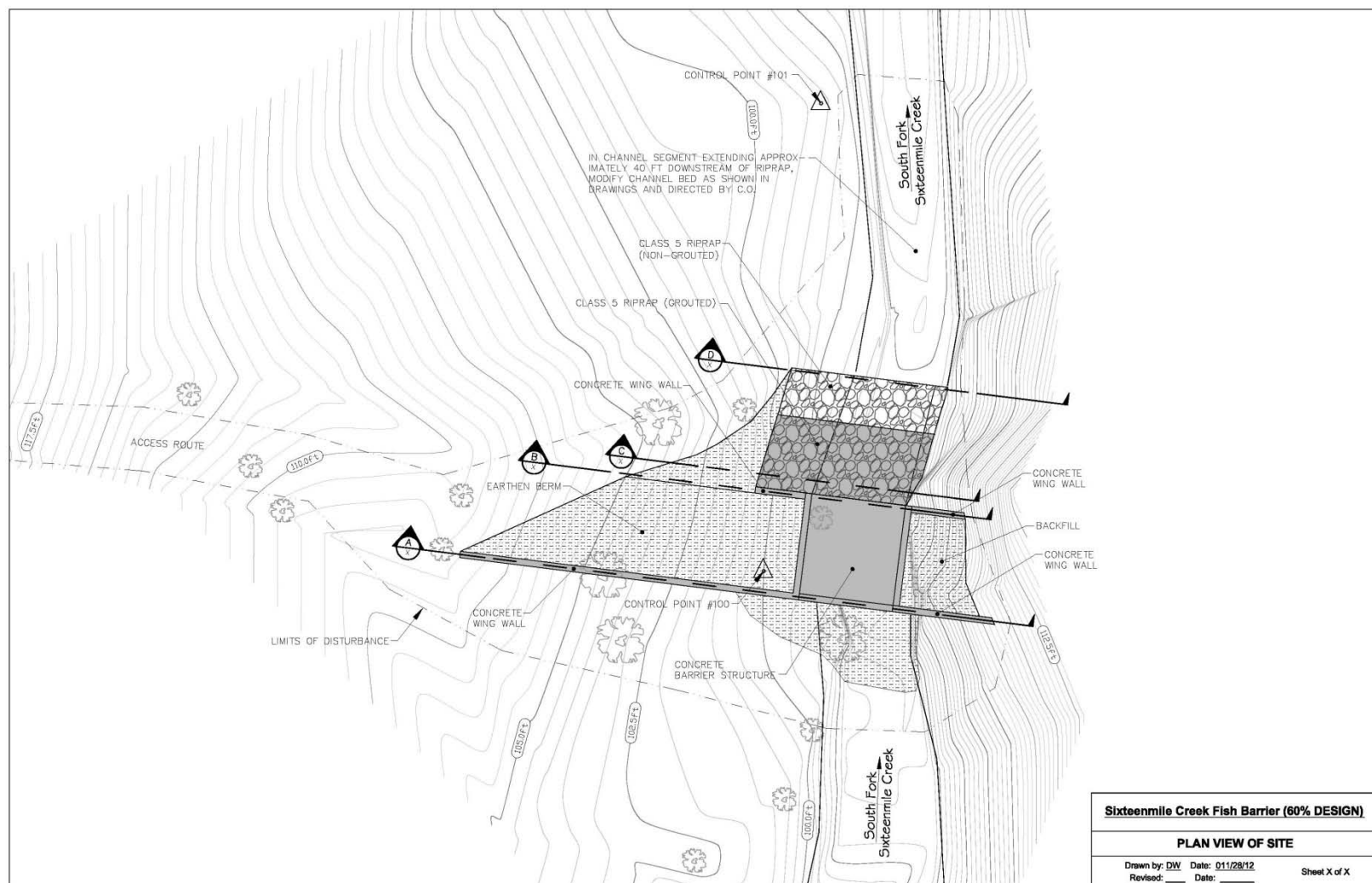
**\*\*\*Applications may be submitted at any time, but must be received by the Future Fisheries Program office in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.\*\*\***

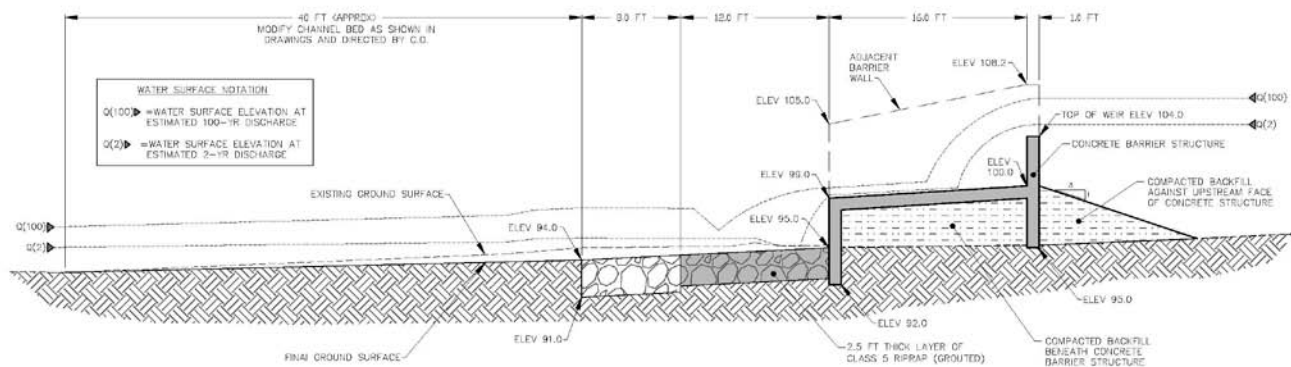


Revised August 5, 2009

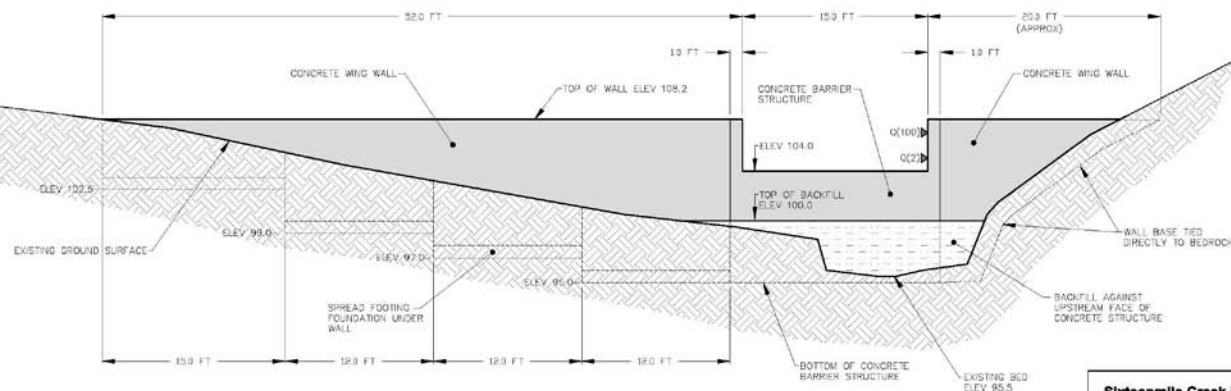








LONGITUDINAL SECTION THROUGH CENTERLINE OF STRUCTURE  
(NOT TO SCALE)



SECTION  
A  
X  
CROSS SECTION AT UPSTREAM FACE OF CONCRETE BARRIER STRUCTURE  
(NOT TO SCALE)

Sixteenmile Creek Fish Barrier (60% DESIGN)

LONGITUDINAL PROFILE & SECTION A

Drawn by: DW Date: 11/28/12  
Revised: Date:

Sheet X of X



# Draft Design Report

By: Dale White, PE

## Hydraulic Analysis

Hydraulic analysis was carried out using the 2-dimensional Hec-Ras River Analysis System program developed by the U.S. Army Corps of Engineers. A Hec-Ras model was constructed based on the site survey data collected in 2011. Manning's 'n' values assigned to the channel, floodplain, and concrete structure were 0.04, 0.06, and 0.015, respectively, based on roughness tables.

## Hydrology

Hydrologic calculations were performed using the USGS web-based streamflow calculator titled Montana Flood Frequency and Basin Characteristic Data, Methods for Estimating Flood Frequency at Ungaged Sites in Montana located at [http://mt.water.usgs.gov/freq?page\\_type=gen\\_stats\\_1](http://mt.water.usgs.gov/freq?page_type=gen_stats_1). This calculator utilizes regression equations presented by Parrett, Charles, and Johnson, D.R. in Methods for estimating flood frequency in Montana based on data through water year 1998, U.S. Geological Survey Water-Resources Investigations Report 03-4308. Discharges were calculated based on a measured watershed area of 6.2 square miles, with 99% of watershed area above 6000' elevation. The discharges and associated return periods are listed below.

<u>Return Pd.</u>	<u>Discharge in cubic feet per second (cfs)</u>
2-yr	42
5-yr	79
10-yr	111
25-yr	159
50-yr	201
100-yr	246

## Barrier Design

**Materials:** In order to maximize durability and longevity, the barrier will be constructed of reinforced concrete.

**Hydraulic Design:** The barrier is designed to convey the estimated 100-yr discharge of 246 cfs without sustaining significant structural damage. The sidewalls that funnel streamflow over the barrier weir extend one foot above the 100-yr flood water surface in order to provide extra conveyance capacity. Such capacity might be needed in the event of debris lodging on or across the weir during high flow events.

**Barrier Configuration:** The barrier consists of a 4-ft vertical drop onto a 16-ft long concrete splash apron set at a 5% gradient. The downstream end of the apron is elevated 1 foot above the estimated 50-year downstream water surface elevation to prevent backwatering of the apron during high flows. This will ensure extremely high water velocity on the apron at all flows up to and including the 100-year event.

**Barrier Performance:** This barrier will pose velocity and depth challenges to fish on the concrete apron and a leap height challenge at the 4-ft vertical drop. Based on hydraulic conditions calculated using the Hec-Ras model, it can be expected with a high degree of certainty that fish will not be able to negotiate the structure at any flow up to and including the 100-yr discharge.

## **Water Impoundment**

The Montana DNRC does not take specific interest in a structure unless it impounds at least 50 acre feet of water or DNRC receives a complaint about the structure. Based on the Hec-Ras model, impoundment by the proposed weir will be approximately 0.8 acre-ft under low flow conditions and 1.6 acre-ft during the 100-yr discharge.

## **Maintenance**

The barrier will require periodic inspection for debris blockage at the inlet and debris/sediment deposition on or downstream of the concrete apron. All debris and sediment should be removed from these areas in order to preserve the supercritical flow conditions on the apron (which are critical to barrier function). In addition, the structure should be inspected for damage, leakage, or undermining periodically and after every high discharge event.